

TWO NEW SPECIES OF *PENSTEMON* SUBG. *HABROANTHUS*
(SCROPHULARIACEAE) FROM MÉXICO

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ABSTRACT

Two new species of *Penstemon* subg. *Habroanthus* are described from México: *P. luteus* (yellow flowered) from Coahuila and *P. galloensis* (blue flowered) from Nuevo León.

KEY WORDS: *Penstemon* subg. *Habroanthus*, Scrophulariaceae, México

Study of specimens recently collected in northeastern México by the Hinton family has revealed the existence of two previously undescribed species of *Penstemon*. The morphology of the anther sacs (dehiscing from the apices inward, usually leaving the central portion indehiscent) in both of these species places them in *Penstemon* subg. *Habroanthus* Crosswh. (Crosswhite 1967; Holmgren 1984). The taxonomic position of each species within the subgenus is discussed following its description.

Penstemon luteus Nesom, *sp. nov.* TYPE: MÉXICO. Coahuila. Mpio. Arteaga, Sierra El Coahuilón, scattered in pine woods, 3100 m, 17 Jun 1991, *Hinton et al.* 21009 (HOLOTYPE: TEX!).

Ex affinitate *Penstemoni* subg. *Habroanthi* Crosswh., imprimis proprius floribus tubularibus luteisque et inflorescentia floribus numerosis in pedunculis ac pedicellis longis.

Herbs 0.6 m tall; stems and leaves completely glabrous, eglandular, slightly glaucous. Leaves opposite, linear-lanceolate, entire, epetiolate, the uppermost (below the inflorescence) 6-8 cm long, 5-10 mm wide. Inflorescence a thyrse of ca. 20 verticillasters, not secund, the cymes 3-7 flowered on peduncles 4-6 cm long and pedicels 10-15 mm long; sepals green, lightly striate, 6-7 mm long, ovate-acuminate with entire margins; corollas yellow (as noted on the collector's label), drying yellow, apparently without other coloration, glabrous

outside, the palate sparsely villous with long, yellowish hairs, tubular, 25-35 mm long, gradually expanded, slightly if at all ventricose, ca. 8-10 mm wide at the throat, apparently without ventral grooves, strongly bilabiate, the lower lobes 7-8 mm long and strongly reflexed, the upper lobes 4-5 mm long and projecting past the lower; fertile stamens nearly reaching the throat but not exerted, the anther sacs glabrous, widely divergent, 3 mm long from tip to tip, dehiscent from the distal ends, leaving the proximal portion indehiscent and often slightly gibbous, the suture margins minutely sharp papillate; staminode glabrous, ca. half the length of the fertile stamens. Mature fruits not seen. Known only from the type collection, represented by a specimen with the inflorescence and upper portion (45 cm long) of a stem of a single plant.

All previously described species of subg. *Habroanthus* produce blue to red flowers. There is no other yellow flowered species of *Penstemon* in México, and such are rare within the genus over its entire range of geography and morphology. Even if the flowers of *P. luteus* were some other color, however, it still could not be identified as any previously known species. Besides *P. luteus*, *P. barbatus* (Cav.) Roth is the only other species of subg. *Habroanthus* that occurs in the high sierra of southeastern Coahuila. Plants of *P. barbatus* are generally smaller and produce flowers with red corollas in few flowered inflorescences on thinner stems, exerted stamens, and staminodes as long as the fertile stamens.

Penstemon subg. *Habroanthus* has been divided into two sections, based on flower color and morphology: sect. *Habroanthus* (= sect. *Glabri* [Rydb.] Pennell) produces ventricose, blue to violet flowers; sect. *Elmigeri* (Reichb.) Benth. produces tubular, gradually ampliate, red flowers. These differences apparently are correlated with hummingbird pollination in sect. *Elmigeri* vs. wasp pollination in sect. *Habroanthus* (Crosswhite 1967). *Penstemon luteus* represents a third mode of variation within subg. *Habroanthus*, and although its yellow, tubular flowers are probably hummingbird pollinated, it justifiably could be accorded sectional status on a phenetic basis, since flower color is the primary distinction between the two previously recognized sections. It is not clear, however, that the relatively few species of sect. *Elmigeri* represent a monophyletic group (Crosswhite 1965, 1976), and *P. luteus* may itself have been derived from a red flowered ancestor. *Penstemon barbatus* (the type of sect. *Elmigeri*) hybridizes with the blue flowered species *P. laevis* Pennell, *P. speciosus* Dougl. ex Lindl., and *P. leiophyllus* Pennell of sect. *Habroanthus* as well as with *P. palmeri* A. Gray of subg. *Penstemon* (Holmgren 1984).

Penstemon sect. *Elmigeri*, which has not been the subject of a study or even a recent taxonomic summary (not even by Crosswhite 1965 or 1967), comprises eight species: *P. barbatus*, *P. wislizeni* (A. Gray) Straw, *P. imberbis* (Willd.) Poir., *P. labrosus* (A. Gray) Hook., *P. eatonii* A. Gray, *P. cardinalis* Woot. & Standl., *P. regalis* A. Nels. (or *P. cardinalis* subsp. *regalis* [A. Nels.] Nisbet & Jackson), and *P. henricksonii* Straw. *Penstemon barbatus* occurs from central

México northward to Coahuila and Texas and to Durango, Chihuahua, and the southwestern United States; *P. wislizeni*, *P. imberbis*, and *P. henricksonii* are endemic to México (Straw 1959, 1976); *P. labrosus* occurs in California and Baja California Norte, and the last three species are restricted to the southwestern United States. Apart from the two species described in the present paper, all the species of sect. *Habroanthus* are restricted to the western United States.

Penstemon galloensis Nesom, *sp. nov.* TYPE: MÉXICO. Nuevo León. Mpio. Galeana, Cerro El Gallo, oak woods, 2100 m, 16 Aug 1987, *Hinton et al.* 19166 (HOLOTYPE: TEX!).

Penstemoni barbato (Cav.) Roth similis sed differt floribus azureis, sepalis ovatis marginibus denticulatis, antherarum sacculis paginis dense minute papillatis, et staminodio apice papillato longitudine ca. 2/3 staminum partes aequanti.

Perennial herbs ca. 0.6 m tall; stems and leaves completely glabrous, eglandular. Leaves opposite, the cauline linear-lanceolate, 7-10 cm long 2.5-4.0 mm wide, the basal oblanceolate to spatulate, 10-12 cm long, the blades 10-22 mm wide. Inflorescence a thyrse of ca. 8 verticillasters, apparently not secund, the cymes 2-3 flowered on peduncles 2-4 cm long and pedicels 1-2 cm long; sepals greenish, glabrous, ovate-deltate-acuminate with denticulate-serrulate margins, lightly striate, the lobes 6-7 mm long; corollas purple, ventrally whitish, with dark purple stripes running onto the lower lip, glabrous outside, lightly bearded on the palate and proximal portions of the lower lobes, 27-30 mm long, tubular, slightly ventricose, apparently without prominent ventral grooves, ca. 5-6 mm wide at the throat, strongly bilabiate, the upper lobes 7-8 mm long, the lower lobes 6-7 mm long and strongly reflexed; fertile stamens definitely exerted from the corolla tube, the anther sacs densely and minutely papillate, widely divergent, 4 mm long from tip to tip, dehiscent from the distal ends, leaving the proximal third of each sac indehiscent and often slightly gibbous, the suture margins smooth; staminode distinctly papillate at the apex, ca. 2/3 the length of the fertile stamens. Mature fruits not seen. Known only from the type collection.

Penstemon galloensis is similar in its vegetative morphology and strongly bilabiate corollas to *P. barbatus*, but the sepals of the latter are triangular, the corollas red, the anther sacs smooth, and the staminode equaling the length of the fertile stamens, without a papillate apex. In Crosswhite's taxonomic arrangement of subg. *Habroanthus* (1967), *P. galloensis* would be placed with other blue flowered species in sect. *Habroanthus* series *Habroanthus*. The other species of this group are restricted to the western United States, and the evolutionary relationship of *P. galloensis* to these is not clear. The new species is compared here in the Latin diagnosis to *P. barbatus* because the latter is

the only putatively related species, besides *P. luteus*, that grows in northeastern México. In a key that includes the majority of the related taxa of sect. *Habroanthus* in the western United States (Holmgren 1984), *P. galloensis* runs with difficulty to the vicinity of *P. speciosa* Dougl. ex Lindl., the most widely distributed species of the section, and *P. laevis* Pennell. These are perhaps closely related to the new species, but both differ from it in their more compact inflorescences, flowers with broader throats, and smooth anther sacs that are sigmoidally twisted.

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